

“extending in parallel” wherein the thin-walled members each have a ridge line (7) “sloping toward the opening cover (2).” In particular, the Examiner states that it is unclear “how the members can extend in parallel and be sloping.” Applicant has amended claim 1 to state: “the supporting protrusion consists of a pair of thin-walled members extending in the longitudinal direction of the hollow cylindrical body, and attached to said inner peripheral wall along substantially parallel edges.” Thus, claim 1 requires that the edges of the thin walled members along which they attach to the inner peripheral wall be substantially parallel, similar to the previous claim language, but no longer recites the language deemed indefinite by the Examiner. Applicant’s amendment is supported in the specification as originally filed, and reference is made in particular to the drawing Figures. Figure 2 is a cross-sectional view of joint 1, and illustrates supporting protrusions 5, extending longitudinally in joint 1, and having substantially parallel attachment edges, as required by claim 1, as amended herein. Similarly, Figure 4(b) illustrates an alternative embodiment wherein the thin-walled members are oriented slightly differently than in the Figure 2 embodiment, but their attachment edges are still substantially parallel. The §112 rejections are therefore overcome, and Applicant respectfully solicits withdrawal of the same.

Claims 1-6, 12 and 14 stand rejected in the October 22 Office Action under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 5,392,582 to Abukawa in view of JP Patent 4-34318 to Goro Yoshioka. In the subject Office Action, the Examiner states in regard to claims 1-5 and 14 that “Abukawa discloses the claimed invention except having a bolt hole with a bolt on the side wall.” Applicant disagrees, for the reasons given below, and now amends better clarify the invention. Amended claim 1 recites the additional limitations: “first and second supporting protrusions,” and “at least the first of the supporting protrusions.” Amended claim 1 also recites the limitation: “the portion of the inner peripheral wall between the first and second supporting protrusions is substantially linear.” Amended claim 1 sets forth limitations absent from the cited references, and therefore withdrawal of the rejection thereto is respectfully requested.

Neither of the cited references, U.S. Patent No. 5,392,582 and JP 4-34318, teaches a joint having first and second supporting protrusions. As set forth in Applicant’s specification, a supporting protrusion “consists of a pair of thin-walled members

extending in parallel” (specification page 6, line 3). Applicant’s Figures 1(a) and 1(b) and 3(a) and 3(b) all illustrate joints having first and second supporting protrusions, each a pair of thin-walled members. Because Applicant’s amended claim 1 recites limitations not taught by the cited references, the proposed combination does not teach all the limitations of the present invention, and the rejection is overcome.

Claim 1 has also been amended to require a joint wherein the portion of the inner peripheral wall between first and second supporting protrusions is “substantially linear.” Support for this limitation is evident in Figures 1 and 3, wherein the wall section of the cylindrical body 1 that lies between the first and second supporting protrusions is substantially linear. That is, the relevant portion of the inner wall in Applicant’s invention is a substantially straight-sided cylinder, and is not interrupted by a stopper or similar structure that extends inwardly, toward the center of the joint. Moreover, this limitation is consistent with, and implicitly set forth in Applicant’s written disclosure. On page 5, first paragraph, Applicant identifies challenges associated with mortar flow in designs having a supporting protrusion formed perpendicular to the central axis of the cylindrical body. In particular, in such a design, “the supporting protrusion is formed perpendicularly to the central axis of the sleeve, that is, formed along the inner periphery of the sleeve, the mortar flow along the sleeve central axis is hindered by the supporting protrusion when filling the sleeve with mortar, so that a large grouting resistance or space unfilled with mortar (void) is formed on the back side of the supporting protrusion, resulting in a deterioration in the reinforcing bar connecting performance of the joint.” Further, at page 19, number 2, Applicant states: “the resistance when grouting the joint with mortar is small, thereby achieving a reduction in operational time, simplification of operation, and a further improvement in operational efficiency;” and at number 4, Applicant states “it is possible to prevent void formation as a result of mortar grouting.” Claim 1, as amended, thus recites a structural limitation that was explicitly disclosed in the original drawings, and implicitly disclosed in the specification as filed. Abukawa and Yoshioka are both designs that are distinct from the present invention, wherein a stopper or other, inwardly oriented protrusion is utilized in orienting or positioning the reinforcing bar. Applicant’s amended claim 1 therefore recites limitations that are absent from the cited references. The proposed combination cannot present a prima facie case

of obviousness, the rejection to claims 1-14 under §103 is therefore overcome, and Applicant respectfully requests withdrawal of the same.

Applicant has also submitted new claims 15 and 16. Claim 16 is similar to original claim 9, but depends from claim 15. Claim 15 is directed to subject matter similar to claim 1, however, claim 15 recites the limitation: "engagement of the thin-walled members with the reinforcing bars aligns the reinforcing bars in a substantially coaxial fashion." Figure 1(a) illustrates a joint 1, having two reinforcing bars 12-a and 12-b positioned therein in substantially coaxial fashion. Moreover, as shown, engaging the bars with the thin-walled members 5 (shown in Figure 2), aligns the bars as desired. This feature and the related advantages of the presently claimed invention are generally described in the specification at page 13, line 6 to page 14, line 14. Specifically, subject matter distinctive to new claim 15 is discussed at page 13, lines 20-22:

[The reinforcing bar] is automatically guided toward the reinforcing bar supporting portions 6 while sliding on the pair of thin-walled members...until it is arranged coaxially with the joint...

Each reinforcing bar, inserted at opposite ends of the joint, is thereby guided into a position that is substantially coaxial with the joint (and therefore with the other reinforcing bar). Moreover, as set forth in the specification, joint systems are typically larger, and more grout is necessary, taking a relatively longer time to cure, where the reinforcing bars are not coaxially aligned (specification page 4, line 13 to page 5, line 1). Neither Abukawa nor Yoshioka disclose joints wherein two reinforcing bars may be aligned coaxially by engagement with thin-walled members in the joint, and the present invention therefore provides an improvement in design and operation in certain environments.

Accordingly, the allowance of claims 1-16 and passage of the subject application to issue is courteously solicited. If the Applicant may be of any further assistance in the prosecution of this Application, the Examiner is invited to contact the undersigned at (248) 364-2100.

Respectfully submitted,

A handwritten signature in cursive script, reading "Laurence C. Begin", written over a horizontal line.

Laurence C. Begin

(Reg. No. 42,310)

Appendix

Amended Version of Claims Illustrating Changes

1. (AMENDED) A mortar grouting type joint for reinforcing bars, comprising a hollow cylindrical body having an opening cover (2) at an end, a bolt hole (8) on the side wall, and first and second [a] supporting protrusions (5) on the inner peripheral wall, adapted to support reinforcing bars (12) with [a] bolts (13) and the supporting protrusions (5), wherein:

the portion of the inner peripheral wall between the first and second supporting protrusions is substantially linear;

at least the first of the supporting protrusions (5) consists of a pair of thin-walled members extending [in parallel] in the longitudinal direction of the hollow cylindrical body, and attached to said inner peripheral wall along substantially parallel edges; and

said thin-walled members each have a ridge line (7) sloping toward the opening cover (2), with the portion of the thin-walled member supporting the reinforcing bar (12) inserted through the opening cover (2) constituting the apex.

4. (AMENDED) A mortar grouting type joint for reinforcing bars according to claim 1, wherein the bolt hole (8) is situated between the first supporting protrusion (5) and the opening cover (2).

5. (AMENDED) A mortar grouting type joint for reinforcing bars according to claim 1, wherein the bolt hole (8) is situated in the portion of the cylindrical body side wall facing to the first supporting protrusion (5).